Instruction 51-1058
4-20-06

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Because every industry has a leader

Installation Instructions: S&S® 5-Speed Trasmission Case for 1986-'99 Big Twin and Custom Applications

DISCLAIMER:

S&S parts are designed for high performance, off road, racing applications and are intended for the very experienced rider only. The installation of S&S parts may void or adversely effect your factory warranty. In addition such installation and use may violate certain federal, state, and local laws, rules and ordinances as well as other laws when used on motor vehicles used on public highways, especially in states where pollution laws may apply. Always check federal, state, and local laws before modifying your motorcycle. It is the sole and exclusive responsibility of the user to determine the suitability of the product for his or her use, and the user shall assume all legal, personal injury risk and liability and all other obligations, duties, and risks associated therewith.

The words Harley®, Harley-Davidson®, H-D®, ®, Evolution®, and all H-D part numbers and model designations are used in reference only. S&S Cycle is not associated with Harley-Davidson, Inc.

SAFE INSTALLATION AND OPERATION RULES:

Before installing your new S&S part it is your responsibility to read and follow the installation and maintenance procedures in these instructions and follow the basic rules below for your personal safety.

● Gasoline is extremely flammable and explosive under certain conditions and toxic when inhaled. Do not smoke. Perform installation in a well ventilated area away from open flames or sparks.

● If motorcycle has been running, wait until engine and exhaust pipes have cooled down to avoid getting burned before performing any installation steps.

● Before performing any installation steps disconnect battery to eliminate potential sparks and inadvertent engagement of starter while working on electrical components.

● Read instructions thoroughly and carefully so all procedures are completely understood before performing any installation steps. Contact S&S with any questions you may have if any steps are unclear or any abnormalities occur during installation or operation of motorcycle with a S&S part on it.

● Consult an appropriate service manual for your motorcycle for correct disassembly and reassembly procedures for any parts that need to be removed to facilitate installation.

● Use good judgement when performing installation and operating motorcycle. Good judgement begins with a clear head. Don't let alcohol, drugs or fatigue impair your judgement. Start installation when you are fresh.

● Be sure all federal, state and local laws are obeyed with the installation.

● For optimum performance and safety and to minimize potential damage to carb or other components, use all mounting hardware that is provided and follow all installation instructions.

● Motorcycle exhaust fumes are toxic and poisonous and must not be inhaled. Run motorcycle in a well ventilated area where fumes can dissipate.

IMPORTANT NOTICE:

Statements in this instruction sheet preceded by the following words are of special significance.

⚠ WARNING

Means there is the possibility of injury to yourself or others.

⚠ CAUTION

Means there is the possibility of damage to the part or motorcycle.

NOTE

Other information of particular importance has been placed in italic type.

S&S recommends you take special notice of these items.

WARRANTY:

All S&S parts are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of twelve (12) months from the date of purchase. Merchandise that fails to conform to these conditions will be repaired or replaced at S&S's option if the parts are returned to us by the purchaser within the 12 month warranty period or within 10 days thereafter.

In the event warranty service is required, the original purchaser must call or write S&S immediately with the problem. Some problems can be rectified by a telephone call and need no further course of action.

A part that is suspect of being defective must not be replaced by a Dealer without prior authorization from S&S. If it is deemed necessary for S&S to make an evaluation to determine whether the part was defective, a return authorization number must be obtained from S&S. The parts must be packaged properly so as to not cause further damage and be returned prepaid to S&S with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem, how the part was used and the circumstances at the time of failure. If after an evaluation has been made by S&S and the part was found to be defective, repair, replacement or refund will be granted.

ADDITIONAL WARRANTY PROVISIONS:

(1) S&S shall have no obligation in the event an S&S part is modified by any other person or organization.

(2) S&S shall have no obligation if an S&S part becomes defective in whole or in part as a result of improper installation, improper maintenance, improper use, abnormal operation, or any other misuse or mistreatment of the S&S part.

(3) S&S shall not be liable for any consequential or incidental damages resulting from the failure of an S&S part, the breach of any warranties, the failure to deliver, delay in delivery, delivery in non-conforming condition, or for any other breach of contract or duty between S&S and a customer.

(4) S&S parts are designed exclusively for use in Harley-Davidson® and other American v-twin motorcycles. S&S shall have no warranty or liability obligation if an S&S part is used in any other application.

INTRODUCTION

S&S® transmission cases are made from virgin 356T6 aluminum alloy and machined with state-of-the-art CNC equipment. S&S Transmission Case 56-1050 fits 1986-1999 Harley-Davidson® Softail® models (1986-1988 models require Starter Adapter Kit 56-1046.) and custom applications.

S&S 5-Speed Transmission Case includes shift lever adjustment screw, shifter shaft guide, and all studs and dowel pins required for assembly. S&S transmission case accepts stock and aftermarket 5-speed style trap doors, gears, shafts, bearings, and other parts designed for 1986-1999 Softail® transmission.

NOTES

- *Starter Adapter Kit 56-1046 required for 1986-1988 models can be purchased separately through S&S dealers or direct.*
- *When building a transmission, S&S recommends using the 1987-up style trap door and end cover with "ball and ramp clutch actuator. Strength of lever-type actuator is marginal for heavy duty clutch springs sometimes required in high-performance applications.*

Following options are available for S&S Transmission Case Part 56-1050:

- Bearing and Seal Kit 56-1050B.
- Trap Door Assembly 56-1027 (Includes door bearings and miscellaneous hardware.)
- Starter Adapter Kit for 1986-'88 style starter, 56-1046.

INSTALLATION

If required, 1986-'88 Starter Adapter Kit 56-1046 should be installed before assembling transmission.

To install Starter Adapter Kit:

1. Carefully support starter area of transmission case on table of hydraulic press. Apply thin film of Loctite® #609 (green) to outer edge of starter adapter spacer 56-1066 and corresponding area of transmission case. Press spacer into case until flush with starter mounting surface.
2. Remove dowel pin 50-8171 **(Item 8, Figure 2)**
3. Apply thin film of oil to outside of dowel pin 50-8029, dowel pin 50-8172, and roll pin 50-8174 **(Items 2, 3, and 4, Figure 1)** and press into transmission case until flush with inner primary mounting surface.
4. Install starter seal 56-1065 in adapter spacer. Seal must be flush with outer surface of spacer.

NOTE: *Install seal with spring side toward primary cover. Confirm fit of starter drive housing and inner primary cover on transmission case.*

ASSEMBLY

Assembly of transmission using S&S case for Softail® models and related parts is identical to assembly of transmission using stock components. Refer to following notes and Harley-Davidson® Service Manual.

NOTES

- *Several differences exist between Harley-Davidson® 5-speed transmissions of certain year groups. Most common differences are between shifter cams, main drive gears, sprockets, spacers, and seals. Correct parts must be used for each year group and transmission must be assembled according to Harley-Davidson® Service Manual for appropriate model year. Shift lever adjuster screw 56-1002* ***(See Figure 2)*** *will require adjustment after transmission assembly/installation and before operation of motorcycle. See Harley-Davidson® Service Manual for further information. After adjustment, secure screw with hex-head nut 50-5044.* ***See Figure 2.***
- *Inspect all parts before installation in case. Shifter forks are especially critical for proper operation of transmission. Confirm shifting through all five gears before installing transmission. Shifting will be stiff with transmission out of motorcycle, and it will be necessary to rotate transmission sprocket back and forth to engage some gears.*
- *Early-style (pre-1992) transmission sprockets use a sockethead screw as sprocket nut retainer. S&S recommends modifying early-style sprocket to accept sprocket nut lockplate H-D® #40251-92. To modify early sprocket for lockplate, install sprocket and torque sprocket nut to 110-120 ft-lbs. Place lockplate over nut and against sprocket. Use one of four holes in lockplate as guide and drill and tap sprocket for ¼-20 x ⅝ sockethead screw H-D® #3594A. Clean threads of screw with Loctite® Primer or equivalent, apply Loctite® #242 (blue) to threads, and install screw to secure lockplate. Tighten to 50-60 in-lbs. as explained in Harley-Davidson® Service Manual. Remove metal chips before continuing installation.*

⚠ CAUTION

Parts must be adequately supported when using hydraulic press. This is especially true when installing bearings in trap door. Failure to support parts correctly may result in damage not covered under warranty.

⚠ WARNING

- **Proper assembly of transmission with correct parts in good condition is critical for safe operation of motorcycle. Transmission malfunction can cause rear wheel to lock and tire to skid. In some instances of transmission malfunction, disengagement of clutch will not free wheel.**
- **Never reuse transmission retaining rings. Damaged retaining ring may permit engagement of two gears at once. This can result in seized transmission and loss of control of motorcycle with severe personal injury to operator and others.**

All reference to Harley-Davidson® part numbers is for identification purposes only. We in no way implying that any of S&S® Cycle's products are original equipment parts or that they are equivalent to the corresponding Harley-Davidson® part number shown.

Replacement Parts for Part 56-1046 Starter Conversion Kit, 1986-'88

Conversion kit, transmission case, starter, 1986-'88 ..... **56-1046**

1. Spacer, starter adapter **56-1066**
2. Pin, dowel, .308" diameter x .70" (H-D® #375) **50-8029**
3. Pin, dowel, 5/16" diameter x 5/16" (H-D® #335) **50-8172**
4. Pin, roll, 1/2" diameter x 3/8" **50-8174**
5. Seal, oil (H-D® #12051) **56-1065**

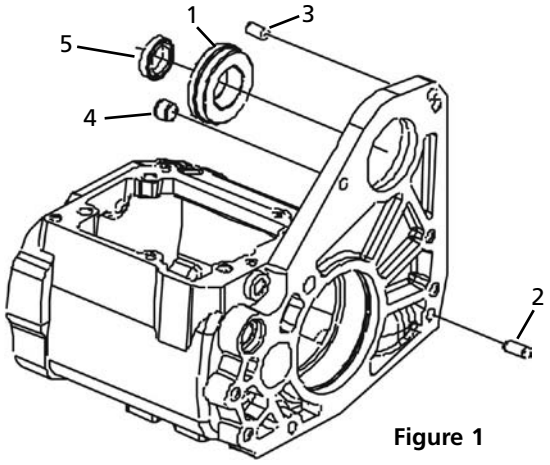

Figure 1

Replacement Parts for S&S Transmission Cases and Accessories

1. Transmission case assembly, 5 speed. rigid mount 1986-up Softail® **56-1050**
2. Case, trans, 5-speed rigid mount, 1989-99 bt ..... **N/A**
3. Screw, socket buttonhead, 1/4 -20 x 1/2" **50-0229**
4. Set-screw, sockethead, 1/2 -20 x 1/2" (H-D® #3784) **50-0203**
5. Nut, hex head, 7/16 -14 (H-D® #7515) **50-5044**
6. Pin, dowel, .308" dia. x .70" (H-D® #375) **50-8029**
7. Stud, 3/8-24, 7/16 -14 x 1.300" (H-D® #11733) **50-8084**
8. Pin, dowel, 5/16" dia. x 1" (H-D® #337) **50-8171**
9. Pin, roll, 3/8" x .300" (H-D® #609) **50-8173**
10. Screw, shift lever adjustment (H-D® #33119-79B) **56-1002**
11. Cover, speedo sensor hole **56-1061**
12. Gasket, speedo sensor hole cover **56-1062**
13. Guide, shifter shaft, 5-speed rigid mount, 1986-'99 bt (H-D® #33114-79) **56-1067**

Kit, transmission case bearings and seals, 5-speed rigid mount

14. Ring, internal retaining, 3.734"OD x .109" tru-arc (H-D® #11161) **50-8051**
15. Seal, oil - 1984-up bt (H-D® #12045) **56-1064**
16. Bearing, trans. output shaft - 1984-up bt (H-D® #8996A) **56-3035**
17. Bearing, trans. countershaft (H-D®#8977) **56-3031**
18. Seal, oil (H-D® #12067A) **56-3033**
19. Door assembly, trans. access, 5-speed rigid mount, 1986-'99 bt **56-1027**
20. Capscrew, sockethead - 1/4 -20 x 1 1/4" (H-D® #3482A) **50-0153**
21. Capscrew, sockethead - 5/16 -18 x 1 1/4" (H-D® #3210A) **50-0121**
22. Washer, flat - 1/4" x 7/16" x 1/16" (H-D® #6099) **50-7013**
23. Washer, flat - 5/16" x .545" x.042" **50-7028**
24. Ring, internal retaining - 2.072" OD x .062" tru-arc (H-D® #35021-89) **50-8053**
25. Pin, roll - 3/8" x .300" (H-D® #609) **50-8173**
26. Pin, roll - 5/16" x 3/4" (H-D® #634) **50-8175**
27. Plug, magnetic - 1/8 -27 (H-D® #739A) **50-8334**
28. Door, transmission access - 5-speed rigid mount 1986-'99 bt **56-1025**
29. Gasket, trans. access door (H-D® #35652-79A) **56-1026**
30. Bearing, trans. access door (H-D® #8998) **56-3036**

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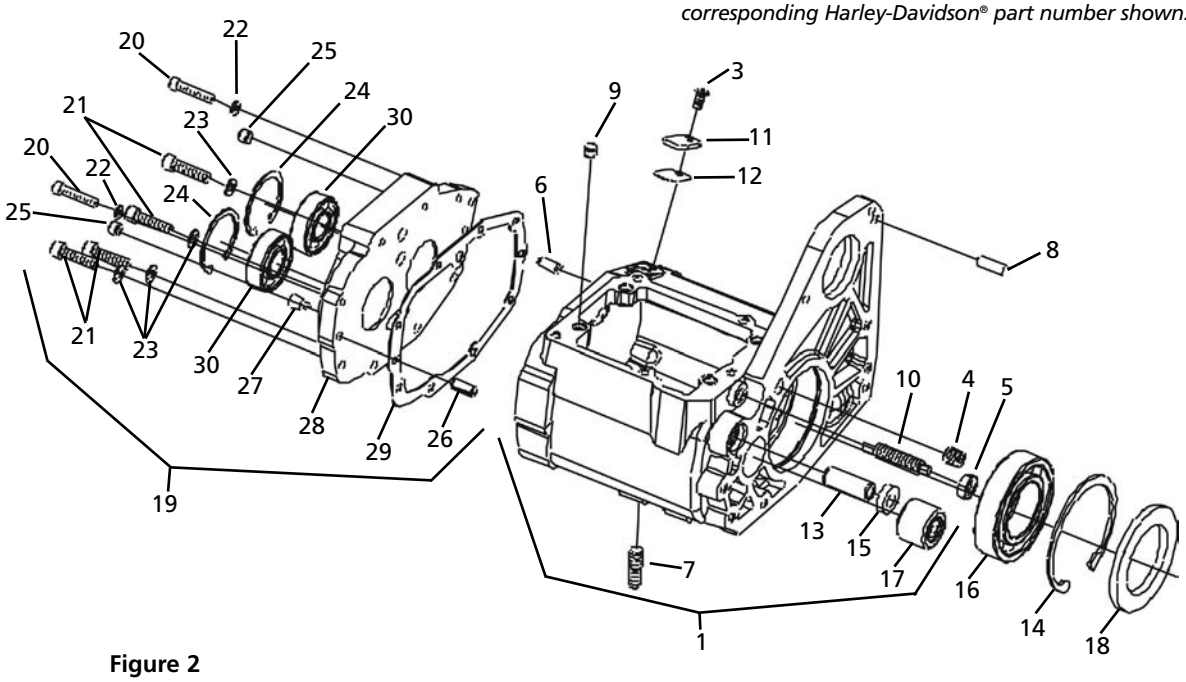

Figure 2

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